REMARKS/ARGUMENTS

Favorable consideration of this application, as presently amended and in light of the following discussion, is respectfully requested.

Claims 9-14 are presently active in this case. Claims 1-8 have been canceled without prejudice or disclaimer. Claims 9-14 have been newly added by way of the present Amendment, without the introduction of new matter as described below.

New Claims 9-14 are fully supported by the specification, drawings and claims as originally filed. For example, independent Claim 9 is supported by the present specification at page 1, paragraph [0002], page 6, paragraph [0019], page 9, last two lines of paragraph [0031], and page 16, paragraph [0057] to page 18, paragraph [0064]; Claims 10, 11 and 13 reorganize and clarify subject matters recited in the claims originally filed; independent Claim 12 is supported by the present specification at page 9, paragraph [0033] to page 12, paragraph [0044]; and Claim 14 is supported by the present specification at page 15, paragraph [0054]. The Applicants therefore submit that no new matter has been introduced.

In the outstanding Official Action, the drawings were objected to as failing to comply with 37 CFR 1.84(p)(5) because Figure 1 includes a reference numeral "2," not mentioned in the description. Figure 1 has been amended to delete the reference numeral "2." Submitted concurrently herewith is a Replacement Sheet which includes the amendment to Figure 1 to address the objection. Accordingly, the Applicants request the withdrawal of the objection to the drawings.

Claims 1-8 have been canceled from the present application, and therefore the rejections thereof have been rendered moot. Thus, the Applicants request the withdrawal of the rejections of Claim 4 under 35 U.S.C. 102(b) and Claims 1-3 and 5-8 under 35 U.S.C. 103(a).

In the outstanding Official Action, Ogura et al. (JP63-61201 A), Murata et al. (U.S. Patent No. 6,261,665), Petcan (U.S. Patent No. 4,494,344), Suzuki et al. (U.S. Patent No. 4,699,640), and Sato et al. (U.S. Patent No. 5,851,252) were cited as references. The Applicants respectfully submit that independent Claims 9 and 12 are allowable over the above cited references because the cited references, either taken singularly or in combination, do not teach all of the limitations recited in Claims 9 and 12, respectively.

Before considering the cited reference, it is believed that a brief review of the subject matter of independent Claim 9 would be helpful. In this regard, Claim 9 is directed to a method of manufacturing a glass optical element of a desired shape. The method includes press molding a heat-softened molding material to form a molded product. The molding material is prepared by solidifying melt glass into a prescribed shape and by providing a carbon-containing layer on a surface of the solidified glass. The molded product is subjected to UV ozone treatment so that the carbon-containing layer which remains on the surface of the molded product is removed. Then, an antireflective film is formed on the surface of the molded product being subjected to the UV ozone treatment.

According to the present invention recited in Claim 9, the molded product is subjected to **UV ozone treatment** so that the carbon-containing layer which remains on the surface of the molded product is removed. Thus, the carbon-containing layer on the molding material is utilized without causing deterioration of the antireflective film. As a result, for the purpose of mass productions, the present invention recited in Claim 9 provides a significant benefit. The cited references, either taken singularly or in combination, do not teach such subject matter recited in Claim 9.

Further, specifically with respect to the Ogura et al. reference, a method according to the Ogura et al. reference is clearly distinguishable from the present invention recited in Claim 9. The method in the Ogura et al. reference creates subtle asperity on a surface of a

molded optical glass element when a glass element is prepared by *grinding* by a curve-generator and *polishing* prior to subjecting to press molding. The subtle asperity deteriorates the transmissivity, and thus lowers the optical performance of the molded optical glass element. In order to remove such subtle asperity, the Ogura et al. reference utilizes etching treatment using hydrogen fluoride followed by washing treatment. However, because an antireflective film tends to be peeled-off if formed on the molded optical glass element being prepared through the above method, the Ogura et al. reference utilizes an ion bombardment. See the Ogura reference at page 2, left-upper column, line 19 to right-upper column, line 19.

Contrarily, in the present invention recited in Claim 9, a molding material to be pressed is prepared by *not* grinding and polishing as in the Ogura et al. reference, *but* solidifying melt glass into a prescribed shape. The molding material, which is prepared by the solidifying, does not create such subtle asperity, and thus does not create necessity of etching. Therefore, the present invention recited in Claim 9 is not concerned with the ion bombardment and clearly distinguishable from the Ogura et al. reference.

Accordingly, the Applicants respectfully submit that independent Claim 9 is in condition for allowance. Claims 10 and 11 are considered allowable for the reasons advanced for independent Claim 9 from which they depend.

Claim 10 is further considered allowable, for example, as Claim 10 recites that the UV ozone treatment is carried out so that surface free energy of the surface of the molded product increases up to at least $60mJ/m^2$. As a result of the surface free energy increasing up to at least $60mJ/m^2$, the occurrence of damages to the antireflective film is remarkably reduced as shown in Table 2 in page 12 of the present specification.

Turning now to Claim 12, Claim 12 is directed to a method of manufacturing a glass optical element of a desired shape. The method includes press molding a heat-softened molding material to form a molded product. The molding material is prepared by solidifying

melt glass into a prescribed shape. A surface of a sample of the molded product is evaluated so that the molded product having surface free energy of at least 60 mJ/m^2 is determined. Then, an antireflective film is formed on the surface of the determined molded product.

According to the present invention recited in Claim 12, a surface of a sample of the molded product is **evaluated so that the molded product having surface free energy of at least 60 mJ/m^2 is determined**. The cited references, either taken singularly or in combination, do not teach such subject matter recited in Claim 12.

In this regard, the Ogura et al. reference among the cited references, for example, is not concerned with evaluating a molded product so that the molded product having surface free energy of at least 60 mJ/m^2 is determined. It is because the surface free energy of the molded product is not a concern in the ion bombardment which the Ogura et al. reference utilizes to prevent the antireflective film being peeled-off due to the etching treatment as discussed above.

However, according to the present invention recited in Claim 12, if contamination on the surface of the molded product occurs, for example, during storage of the molded product,[1] possibilities to have defects in coating of the antireflective film may increase. Because the present invention recited in Claim 12 is concerned with condition of the surface of the molded product, the molded product is evaluated whether the surface energy of the molded product is reached a sufficient level, which is at least $60mJ/m^2$, before actual coating of the antireflective film. Therefore, the present invention recited in Claim 12 is clearly distinguishable from the Ogura et al. reference.

Further, with respect to the evaluating recited in Claim 12, the Murata et al. reference also does not teach that a surface of a sample of the molded product is evaluated so that the molded product having surface free energy of at least 60 mJ/m^2 is determined. Moreover, the

[1] See the present specification at page 9, paragraph [0031], and page 13, lines 2 and 3

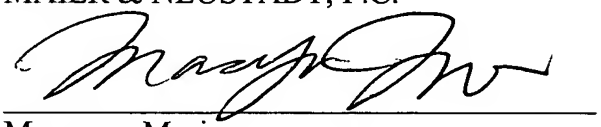
Murata et al. reference does not teach that, when compared to surface free energy of less than 60 mJ/m^2, the surface free energy of at least 60 mJ/m^2 provides significant advantages in that defects of the antireflective film are reduced to substantially 0%. See Table 2 in page 12 of the present specification. Therefore, the present invention recited in Claim 12 is clearly distinguishable from the Murata et al. reference.

Accordingly, the Applicants respectfully submit that independent Claim 12 is in condition for allowance. Claims 13 and 14 are considered allowable for the reasons advanced for independent Claim 12 from which they depend.

Consequently, it is respectfully submitted that the present application is in condition for formal allowance and an early and favorable consideration of this application is therefore requested.

Respectfully submitted,

OBLON, SPIVAK, McCLELLAND,
MAIER & NEUSTADT, P.C.



Masayasu Mori
Attorney of Record
Registration No. 47,301

Hiroyuki Yasuda
Registration No. 55,751

Customer Number
22850

Tel: (703) 413-3000
Fax: (703) 413 -2220
(OSMMN 06/04)

MM/CDW/HY
I:\ATTY\HY\25s\251000US\251000 AM.DOC

IN THE DRAWINGS

The attached sheet of drawings includes changes to Fig. 1. This sheet, which includes Fig. 1, replaces the original sheet including Fig. 1.

Attachment: one Replacement Sheet